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11th EBHC International Conference
Taormina, 21st – 24th October 2026

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Embedding Implementation Science in Quality Improvement

Advancing Evidence Translation for Sustainable, Scalable Healthcare Change

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Background

- Evidence-practice gaps persist despite substantial investment in healthcare improvement.
- Quality improvement (QI) supports iterative testing, adaptation and local improvement – but may not explicitly address implementation determinants.
- Implementation science (IS) addresses context, behaviour and implementation strategies using theories, models and frameworks.
- QI and IS are increasingly combined, but how they are structurally related in practice remains unclear.

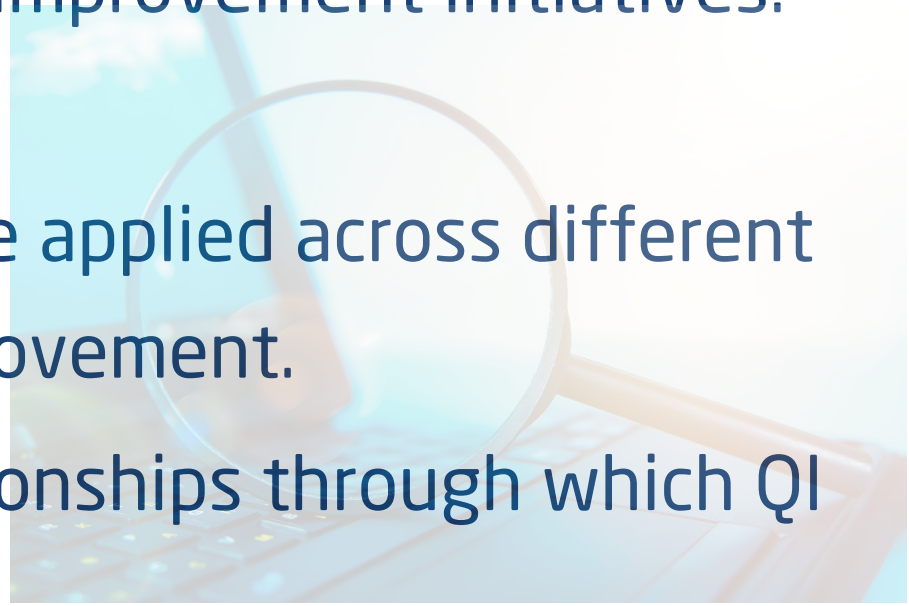


Aims

To examine how QI and IS theories, models and frameworks (IS TMF) are operationalised together in healthcare improvement initiatives.

Specifically, we aimed to:

- Examine how QI methods and IS TMF are applied across different stages and functions of healthcare improvement.
- Develop a typology describing the relationships through which QI methods and IS TMF are combined.



Methods

Design: Secondary case study analysis of published healthcare improvement initiatives

Case identification: Structured PubMed search (January 2026) to identify initiatives explicitly combining QI methods + IS theories, models and frameworks (TMF)

Sampling: Purposive maximum variation, with researcher judgment

Inclusion: Initiatives focused on implementing an established evidence-based practice, with at least one recognised QI method and one IS TMF, and sufficient reporting to determine how they were operationalised together

Analysis: Two reviewers independently extracted data and mapped QI methods and IS TMF across planning, implementation, evaluation and sustainment, followed by iterative cross-case comparison to identify patterns and develop the typology

Results

- 13 healthcare improvement initiatives were included, spanning 8 countries and diverse healthcare settings and clinical topics.
- QI methods primarily supported iterative testing, adaptation and improvement of interventions and care processes.
- IS TMF primarily supported understanding context and behavioural determinants, guiding implementation strategies, and evaluating implementation.
- QI and IS were generally complementary, but the way they were connected varied substantially across initiatives.

Results

1 SEQUENTIAL

Applied at different stages

QI methods
- e.g. PDSA
- Process mapping
- Root cause analysis

→

IS TMF
- e.g. RE-AIM
- NPT

Time

QI and IS TMF are applied at different stages of the initiative, with limited interaction between the two approaches.

Example (from cases):
QI activities undertaken first, followed by application of an IS framework.

2 PARALLEL

Applied concurrently but distinctly

QI methods
- e.g. PDSA
- Lean
- Six Sigma

↔

IS TMF
- e.g. COM-B
- CFIR
- TDF

QI

IS

Time

QI and IS TMF are applied concurrently but remain conceptually and methodologically distinct, with each guiding a different dimension of the initiative.

Example (from cases):
Concurrent use of QI methods and an IS framework to address different aspects of the improvement effort.

3 NESTED

One paradigm within the other

Overarching approach (QI or IS)

Nested approach (IS or QI)
- e.g. QI methods within KTA
- e.g. PDSA as the overarching approach with CFIR-informed assessment within the QI programme

One paradigm provides the overarching structure, while the other is incorporated within specific functions or phases of the project.

Example (from cases):
PDSA as the overarching approach, with CFIR-informed assessment nested within a QI programme.

4 EMBEDDED

Framework-level integration

Integrated framework
(includes QI and IS principles)

QI principles
- Audit and feedback
- Iterative improvement
- Process monitoring

Integrated within a single framework (e.g. JBI)

IS principles
- Contextual assessment
- Implementation strategies
- Behaviour change

Additional IS TMF (as needed)
- e.g. CFIR (contextual assessment)
- e.g. ERIC (strategy selection)

QI and IS principles are integrated within a single overarching implementation framework or operational model, with their boundaries difficult to distinguish. Additional IS TMF may be layered onto the framework to address specific functions.

Example (from cases):
JBI Evidence Implementation Framework, with CFIR and/or ERIC.

More distinct approaches → **Greater integration**

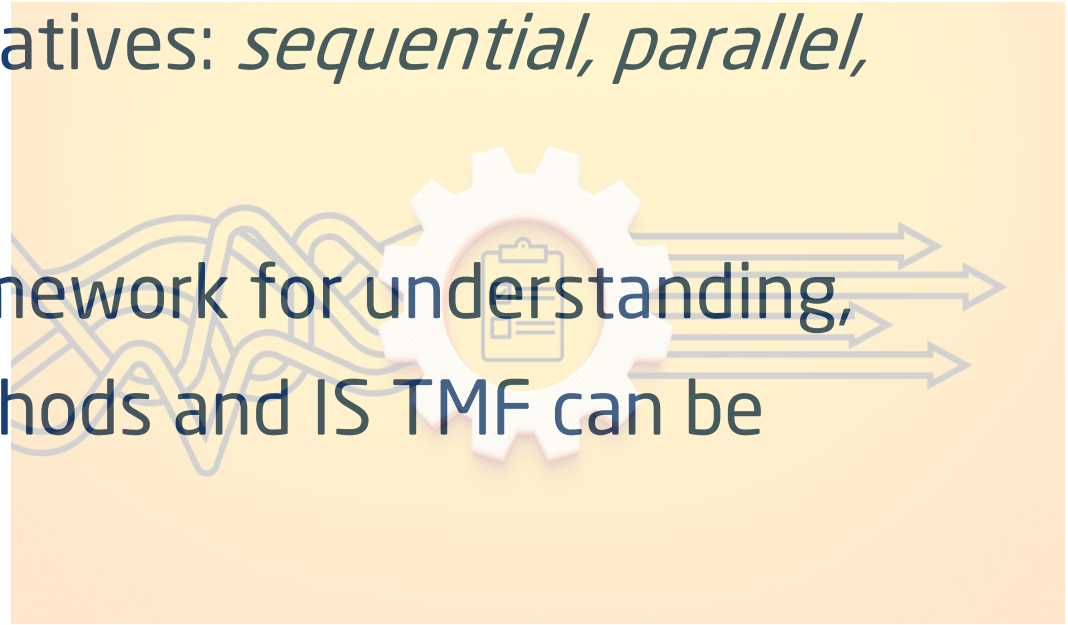
Limits

- Small, purposive sample – 13 information-rich cases; not representative of the broader literature.
- Variable reporting – relationships between QI and IS may have been incompletely described.
- No effectiveness comparison – outcomes were described but not systematically compared across relationship types.

So, this typology should be viewed as a conceptual framework for understanding and describing relationships, rather than a definitive classification system.

Conclusions

- QI and implementation science can be combined in multiple ways within healthcare improvement initiatives: *sequential, parallel, nested and embedded*.
- The typology provides a shared framework for understanding, describing and planning how QI methods and IS TMF can be combined.
- More deliberate integration may support contextually responsive, theory-informed and sustainable healthcare improvement.



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